

is President of Section C (Geology). Among other points which he is likely to discuss will be the following:—That in the history of life on the earth the more complex forms have changed more swiftly than the simpler, because they are more susceptible to changes in their environment. That in the Tertiary age the highest of all, or the placental mammals, are the only forms which have changed with sufficient swiftness to mark the subdivisions of the Tertiary period. They alone are *en pleine évolution*. The borderland between geology and history will be discussed, and the present series of events shown to belong to the Tertiary period. The place of man in the geological record will be considered (pre-glacial). The impossibility of fixing historic dates for geological events will also be discussed. Outside the written record a sequence of events can alone be made out, in which we are ignorant of the length of the intervals. In Section D (Biology), of which Mr. Thiselton Dyer, Director of Kew Gardens, is President, no doubt we may expect some of those discussions on subjects of general biological interest which have been so marked a feature of the Section since Prof. Ray Lankester was its President at Southport. Colonel Sir Charles Wilson presides over Section E (Geography), and his address will deal largely with the commercial aspects of geography. In Section F (Economics), of which Lord Bramwell is President, the Presidential address is likely to be brief, and will deal with the general principles of political economy, and with socialism in particular. Mr. W. H. Preece, of the Telegraph Department, will preside over Section G (Mechanical Science). In his address he will pass under review the various practical applications of electricity, with the introduction of nearly all of which Mr. Preece has been more or less associated. He will also probably say something about the present views of the theory of electricity, about which practical electricians and pure physicists are at entire variance. Finally, in Section H (Anthropology), the address of the President, General Pitt-Rivers, is, like Lord Bramwell's, likely to be short.

Discourses will be delivered in the Drill Hall—on Friday evening, September 7, by Prof. W. E. Ayrton, F.R.S., on "The Electrical Transmission of power"; on Saturday Evening, September 8 (to "the operative classes"), by Sir John Lubbock, M.P., F.R.S., on "The Customs and Ideas of Savage Races"; on Monday evening, September 10, by Prof. T. G. Bonney, F.R.S., on "The Foundation Stones of the Earth's Crust."

The Mayor of Bath invites the members and associates to a *conversazione* in the Assembly Rooms on Thursday, September 6, at 8.30 p.m. The Chairman and members of the Local Executive Committee invite the members and associates to a *conversazione* at the Assembly Rooms, on Tuesday, September 11, at 8.30 p.m. On this occasion the Bath Microscopical Society, assisted by the Bristol Microscopical Society, have arranged for a display of objects in the various departments of natural history, &c. No special cards of invitation will be issued to these *conversaciones*, but all members and associates will be admitted on presentation of their tickets.

The concluding general meeting will be held on Wednesday, the 12th of September, at 2.30 p.m.

On Wednesday and Thursday, the 5th and 6th of September, there will be an exhibition of fruits, flowers, &c., in the Sydney Gardens; to this exhibition all members and associates will be admitted on presentation of their tickets. On the 12th and 13th of September there will be a horse show in Bath; but on this occasion the members and associates will have no special advantages.

The following are the proposed excursions, arrangements for which are in active progress:—

Saturday, September 8.—Stanton Bury, Stanton Drew, Maes Knoll: Bannerdown, Sodbury Camp, Dyrham, Lansdown: Box Quarries, Corsham, Lacock Abbey: Bradford, Farleigh Castle, Wraxall: Cirencester, Museum and College: Tytherington and Thornbury: Swindon, G.W. Works: Berkeley Castle: Wells, *via* Maesbury and Shepton Mallet, Ebbor, Wookey Hole: Barry Docks and Cardiff.

Thursday, September 13.—Stonehenge, Salisbury, Wilton: Silbury, Avebury, Bowood, Wansdyke, Beckhampton: Stourton, Pen Pits, White Sheet, Longleat: Frome Valley, Nunney Whateley: Maesbury, Wells, Glastonbury, Street: Sandford and Banwell, Churchill, Dolbury, Rowberrow, Burrington, the two Charterhouses, Mendip Gorge, Cheddar Cliffs: Severn Tunnel, Chepstow, Tintern, Wyndcliffe: Radstock, Wellow, Littleton.

SOCIETIES AND ACADEMIES.

LONDON.

Entomological Society, August 1.—Dr. D. Sharp, President, in the chair.—Mr. F. D. Godman, F.R.S., exhibited a large number of species of Lepidoptera and Diptera recently collected for him in Mexico by Mr. Herbert Smith.—Mr. White exhibited parasites bred from *Bombyx neustria*, and a living example of *Heterodes guyoni*, found at Dartford, and believed to have been introduced with Esparto grass from Tunis.—Mr. Enock exhibited a stem of barley, showing the appearance of the plant under an attack of Hessian fly.—Mr. Stevens exhibited a number of galls collected at Byfleet in July last; also a specimen of *Colcophora solitariella*, with ichneumons bred from it.—Mr. E. Saunders exhibited a specimen of *Catephia alchymista*, captured at St. Leonards, in June last. He also exhibited specimens of a rare ant (*Anochetus ghilianii*), taken at Tangier by Mr. G. Lewis. One of these he had submitted to Dr. Emery, of Bologna, who thought that, although ocelli were present, the specimen was probably intermediate between a worker and a female, and that possibly the true female did not exist.—Mr. Pascoe exhibited a number of species of Coleoptera recently collected in Germany and the Jura Mountains, and read a note correcting the synonymy of certain species of *Brachycerus* recently described by him in the Transactions of the Society. He stated that the corrections had been suggested by MM. Peringuey and Aurivillius.—Prof. Westwood communicated a paper entitled "A List of the Diurnal Lepidoptera collected in Northern Celebes by Dr. Sydney Hickson, with descriptions of new species."

EDINBURGH.

Royal Society, July 16.—Rev. Prof. Flint, Vice-President, in the chair.—Dr. Traquair read an obituary notice of Mr. Robert Gray, Vice-President.—A paper by Prof. C. G. Knott, Tokio University, on some relations between magnetism and twist in iron and nickel, was submitted.—Mr. R. Kidston communicated a paper on the fossil plants in the Ravenhead collection in the Liverpool Museum.—Prof. Crum Brown submitted an investigation by Mr. Alex. Johnstone on the action of carbonic acid water on olivine.—In a paper discussing the question, Is Talbot's law true for very short stimuli? Dr. G. N. Stewart, Owen's College, describes experiments designed to test whether it is possible to make the luminous stimuli so short that the separate effects cannot be summed. He was able, by means of a rotating mirror, to reduce the length of each stimulus to something like 1/8,000,000 sec. Up to this limit he could detect no variation from the law.—Another paper by Dr. Stewart, on some colour phenomena observed with intermittent stimulation with white light, was communicated. When light of moderate intensity is used, and the rate of stimulation gradually increased, the colour is seen to change regularly in a manner which can be explained on the assumption that the curves representing the course of the excitation in the three hypothetical fibre-groups run in such a way that with a certain length of stimulation time the violet fibres are proportionally more stimulated than the others; with a shorter time of stimulation the green fibres are more stimulated; with a still shorter time, the red.—Dr. H. R. Mill, Scottish Marine Station, discussed the specific gravity of the water in the Firth of Forth and the Clyde sea-area.—Dr. J. Macdonald Brown read a paper on arrested twin development.—The Chairman made some remarks in closing the session.

PARIS.

Academy of Sciences, July 30.—M. Janssen, President, in the chair.—On the relations of atmospheric nitrogen to vegetable soil, by M. Th. Schloësing. The conclusion already arrived at from previous researches (see *Comptes rendus* for March 19 and 26, 1888) is fully confirmed by the results of the subsequent series of experiments here described. Whether exposed to renewed contact with the air, or kept in closed vessels with a confined but oxygenated atmosphere, the soil with which the experiments have been made has in no case fixed any appreciable quantity of gaseous nitrogen. The author supplements this communication with some remarks on the quantitative analysis of the carbon and nitrogen in vegetable earths. The

main object of these remarks is to enable chemists to judge for themselves as to the degree of confidence his conclusions are entitled to.—On the density of chlorine and on the vapour density of ferric chloride, by MM. C. Friedel and J. M. Crafts. For chlorine the mean at 21° C. is here determined at 2.471, and at 440° C. 2.448, while between 321° and 442° C. the perchloride of iron is shown to have a somewhat constant density corresponding to the formula Fe_2Cl_6 .—On the vapour density of the perchloride of gallium, by MM. C. Friedel and J. M. Crafts. According to Lecoq de Boisbaudran's determinations the perchloride of gallium (Ga_2Cl_6) melts at 75°·5 and boils at 215° to 220°. Here the density at 237° and 307° is found to be 11.73 and 10.61 respectively, or somewhat less than the theoretic density. Above 307° it diminishes considerably, falling to 8°·5 at 357°, and 6°·6 at 440°.—On the gigantic dimensions of some fossil mammals, by M. Albert Gaudry. These remarks are made in connection with the accurate measurements of the St. Petersburg mammoth (*Elephas primigenius*) supplied by Tilesius. The skeleton, a photograph of which has recently been taken by M. Strauch, is 3.42 metres high to the top of the head, as compared with the 4.22 of the Dufort skeleton (*Elephas meridionalis*) in the new gallery of the Paris Museum. Comparing these with the remains of *Dinotherium giganteum* and other monsters of the Upper Miocene and later epochs, the author groups the larger extinct mammals according to their dimensions in five classes, as follows: (1) *Dinotherium giganteum* of the Upper Miocene, Attica; (2) *Elephas antiquus* of the Quaternary, neighbourhood of Paris; (3) *Elephas meridionalis* of the Upper Pliocene, Dufort (Gard); (4) *Mastodon americanus*, of the Quaternary, United States; (5) *Elephas primigenius*, of the Quaternary, Siberia, this last being about the same size as the living elephants.—Observations of the comet 1888 a, by M. Cruls. These observations were made at the Imperial Observatory of Rio Janeiro for the period from February 24 to April 2.—Positions of the comet 1888 I., measured with the 8-inch equatorial of the Observatory of Besançon, by M. Gruy. The positions of the comet and comparison stars are given for the period from June 7 to June 19.—An isochronous regulator, by M. Baudot. The object of this apparatus is to maintain at a uniform velocity the rotation of the distributor employed by the inventor in his multiple printing telegraph system, despite the variations of the motor power and those of the resisting force caused by the action of the several parts of the instrument, or by any other disturbing element. Its action consists in introducing into the motor mechanism a resistance varying automatically whenever necessary, thus maintaining a perfect equilibrium between the total motor and resisting forces.—On a telephone with closed magnetic field, and plaque with equal concentric cylindrical sections, by M. Krebs. With the appliance here described the vibrations preserve a large degree of amplitude, while the section is saturated at no point of the magnetic circuit. These dispositions greatly facilitate the construction of powerful instruments of all sizes.—Magnetic charts of the West Mediterranean basin, by M. Th. Moureaux. The magnetic charts which the author now presents to the Academy have been mainly prepared from the data supplied by the series of observations described in the last number of the *Comptes rendus*. They comprise, besides the chief islands, the whole of the European seaboard from Cadiz to the Strait of Messina, and the North African coast between Tangier and Tripoli.—The storage of electricity and thermodynamics, by M. Gouy. In this paper the author endeavours to connect the principle of the preservation of electricity with the general laws of thermodynamics, taking as his experimental starting-point the first law of electric actions.—On the electric conductivity of mixtures of salts in solution, by MM. E. Bouty and L. Poincaré. In the present communication the authors deal mainly with the special case of the nitrates of potassa and soda, their object being to ascertain whether it be possible to deduce the electric conductivity of a mixture of saline solutions, without chemical action, from the conductivity of each, assuming this to be a known quantity.—On the production of ozone by electric shocks, by MM. Bichat and Guntz. Here the authors propose to study the various circumstances which influence the production of ozone by means of explosive discharges. The results obtained show that the formation of ozone is primarily connected with the greater or less elevation of the temperature of the oxygen under the action of the electric shocks.—Notes follow, by M. A. Carnot, on the lithine present in mineral waters; by M. J. Ribau, on a method

of analyzing and separating zinc; by M. de Forcrand, on the glycol-alcoholate of soda; by M. J. Meunier, on a dibenzoic ether derived from mannite; by M. E. Gley, on the comparative toxic properties of wabaine and strophanthine; and by M. Prillieux, on an efficacious treatment of black rot, a disease of the vine which has spread from America to France.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

The Speaking Parrots, Part 4: Dr. K. Russ (L. U. Gill).—British Dogs, No. 22: H. Dalziel (L. U. Gill).—*Challenger* Expedition Reports—Zoology, vol. xxvi. (Eyre and Spottiswoode).—Contributions to the Natural History of Alaska, No. 2: L. M. Turner (Washington).—A New Theory of Parallels: C. L. Dodgson (Macmillan).—Atlantic Weather Charts, Part 4 (Eyre and Spottiswoode).—Arithmetical Exercises and Examination Papers: H. S. Hall and S. R. Knight (Macmillan).—Entomology for Beginners: Dr. A. S. Packard (Holt, New York).—Catalog der Conchylien-Sammlung, Liefg. 8: F. R. Paetel (Berlin).—The Structure and Classification of the Mesozoic Mammalia: H. F. Osborn (Philadelphia).—Insect Life (Washington).—Il Terremoto nel Vallo Cosentino del 3 Dicembre, 1887: G. Agamenone (Roma).—Morphologisches Jahrbuch, Band 14, Heft 1 (Williams and Norgate).—Annalen der Physik und Chemie, 1888, No. 9 (Leipzig).—Verhandlungen des Naturhistorischen Vereines, 5 Jahrg. Erste Hälfte (Bonn).—Annual Report of the American Museum of Natural History, Central Park, New York, for the Year 1887–88.

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